APAKUDZE, V.K.

Observations of a severe brain wound. Vop.neirokhir. 20 no.6:52-53 N-D '56. (MLRA 10:2)

1. Iz dorozhnoy bol'nitsy imeni N.A.Semashko Moskovsko-Kursko-Donbasskoy zh.d.
(BRAIN, wounds and injuries)
severe penetrating wound (Rus))

APALOV, E. N. and KOSTIN, M. V.

"Chloroches for marble fly control in reindeer breeding."

Veterinariya, Vol 38 No. 5 1961

Apalov, E. N. - head of the Okrug (district) Veterinary Bacteriological Laboratory of Komyak National Okrug (district).

ALIKAYEV, V.A.; TARANENKO, I.L., veterinarnyy vrach; NIKOLAYEV, P.Ya., veterinarnyy vrach; MIKHAYLETS, R.M., veterinarnyy vrach; ARTEMENKO, I.A., veterinarnyy fel'dsher; MOSKALENKO, A.N., veterinarnyy fel'dsher; AL'BERTYAN, M.P., veterinarnyy vrach; SKARBOVENKO, V.I., veterinarnyy vrach; MOROZOV, A.I., veterinarnyy fel'dsher; VESHCHEVAYLOV, V.T., veterinarnyy vrach; LUZHENKO, I.U., veterinarnyy fel'dsher; RUDOMETKIN, Ya.L., veterinarnyy vrach; PARSHUTKIN, I.M., veterinarnyy vrach; GOLOVANOVA, A.I., veterinarnyy vrach; SHIPILOVA, N.M., veterinarnyy vrach; SPIROV, V.D., veterinarnyy vrach; BONDARENKO, V.N., veterinarnyy vrach; KOVAL', P.K., veterinarnyy fel'dsher; ZHAMSUYEV, B.TS., veterinarnyy vrach; APALEV, Ye.M., veterinarnyy vrach; KOLOTIY, N.A., veterinarnyy vrach

Diseases of the young animal, their prevention and treatment; based on data received by the editors. Veterinariia 39 no.1:49-54 Ja '62. (MIRA 15:2)

1. Besedinskaya rayonnaya veterinarnaya lechebnitsa, Kurskoy oblasti (for Taranenko). 2. Bo'sho-Sosnovskaya rayonnaya lechebnita, Permskoy oblasti (for Nikolayev). 3. Aleksandrovskiy veterinarnyy uchastok, Voznesenskogo rayona, Nikolayevskoy oblasti, Ukrainskoy SSR (for Mikhaylets, Artemenko, Moskalenko). 4. Kolkhoz "40 let Oktyabrya", Tarliyskogo rayona, Moldavskoy SSR (for Al'bertyan).

(Continued on next card)

ALEKSANDRAVICIUTE, B.; APALIA, Da.; BRUNDZA, K.; BAGDONAITE, A.; CIBIRAS, L.; JANKEVICIENE, R.; LEKAVICIUS, A.; LUKAITIENE, M.; LISAITE, B.; MARCINKEVICIENE, J.; NAVASAITIS, A.; PIPINYS, J.; SVARSKIS, P.; STANCEVICIUS, A.; SARKINIENE, I.; MIKEVICIUS,A., glav. red.; JANKEVICIUS, K., otv. red.; NATKEVICAITE-IVANAUSKIENE,M., red.; DAGYS, J., red.; ZIEMYTE, E., red.; ANAITIS, J., tekhn. red.

[Flora of the Lithuanian S.S.R.] Lietuvos TSR flora. Red. M.Natkevicaite-Ivanauskiene. Vilnius, Valstybine politines ir mokslines literaturos leidykla. Vol.3. 1961. 661 p. (MIRA 15:3)

1. Lietuvos TSR Mokslu akademija. Vilna, Botanikos institutas. (Lithuania--Botany)

APALIA-SIDLIENE, D.

Some facts about the changes in clover (Trifolium sativum crome) yields and in its botanical structure depending upon the degree of soil erosion. Liet ak darbai B no.4:171-179 '59. (RZBiol 9:3)

1. Lietuvos TSR Mokslu akademijos Biologijos institutas.
(Lithuania-- Clover)

APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000101820012-6"

APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000101820012-6"

21 (8)

AUTHORS: Apalin, V. F., Dobrynin, Yu. P. (Deceased), Zakharova, V. P., Kutikov, I. Ye., Mikaelyan, L. A.

SOV/89-7-4-11/28

TITLE: The Mean Number of Neutrons Emitted by U^{235} in Triple Fission

PERIODICAL: Atomnaya energiya, 1959, Vol 7, Nr 4, pp 375-376 (USSR)

ABSTRACT: The triple fission of heavy nuclei with emission of α-particles is a very rare and comparatively little investigated phenomenon. The α-particle spectrum is then continuous, has a broad maximum at an energy of about 15 Mev, and extends up to 28 Mev. The α-particles are essentially emitted in a direction that is perpendicular to that of the departure of the fragments. Some clearness might be obtained with respect to the initial stages of fission processes by investigating triple fission. It is interesting that the boundary of the energy spectrum of α-particles (28 Mev) is noticeably higher than the value that might be furnished by the forces of Coulomb repulsion of the uranium nucleus. According to the authors' opinion, investigation of the characteristics of triple fission as a function of the ratio of the fragment masses and investigation of the energy balance is of great interest. The quantity of neutrons

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flying away in fission is a measure for the excitation of the fragments. The authors therefore determined the average number ν of neutrons emitted in a triple fission of the compound nucleus U^{236}. The investigation was carried out on an electron beam of a VVR-reactor. A U^{235} layer of 0.7 mg/cm^2 thickness was applied to the central electrode of the double ionization chamber. Counting the fission fragments is briefly described. The mean lifetime of the neutrons in the scintillator was 11 microseconds. A total of 5,000 cases of triple fission was recorded. The average number of neutrons per triple fission is 1.77 ± 0.09. If the thickness of the aluminum filter amounts to 35 μ, the system recorded triple fissions in which α-particles with an energy of more than 9 Mev fly off. The authors deemed it to be of essential importance to clear up the connection between ν and α-particle energy. This dependence was measured by means of an aluminum filter of 135 μ thickness. The apparatus recorded only such cases of triple fission in which α-particles with an energy of more than $\sim$ 22 Mev were emitted. The counting rate amounted to 40 coincidences per hour.

The Mean Number of Neutrons Emitted by U^{235} in a Triple Fission SOV/89-7-4-11/28

The mean value of ν in E $\geq$ 22 Mev amounted to 1.79 ± 0.13, which agrees with the results of previous measurements within the limits of measuring errors. The excitation energy of the fragments does not depend on the energy of α-particles with long ranges, which are produced in triple fission. A decrease of ν indicates that the excitation energy of fragments in a triple fission is less by at least 4 to 5 Mev than in the case of a double fission. According to N. Bohr and I. Wheeler (Ref 7), the fragments are deformed before scission of the neck, and the potential energy of deformation further goes over into the excitation energy. The observed decrease of the excitation energy of fragments is probably connected with the decrease of their initial deformation. The authors thank K. S. Mikhaylov and his collaborators for their assistance in producing the scintillation preparations. There are 7 references, 1 of which is Soviet.

SUBMITTED: May 4, 1959

Card 3/3

21.1000,24.6510

77208
SOV/89-8-1-2/29

AUTHORS: Apalin, V. F., Dobrynin, Yu. P. (deceased), Zakharova, V. P., Kutikov, I. Ye., Mikaelyan, L. A.

TITLE: Number of Neutrons Emitted From Individual Fission Fragments of U^{235}

PERIODICAL: Atomnaya energiya, 1960, Vol 8, Nr 1, pp 15-21 (USSR)

ABSTRACT: As is well known, the excitation energy in a fission process is used up according to the equation:

$$E(M)_q = \bar{\nu}(M)\,\epsilon(M) + \epsilon_\gamma(M)$$

where M is mass of the fragment; ν is average number of neutrons liberated from the fragments; ϵ_γ is energy carried away by γ quantas; $\epsilon(M)$ is average energy necessary to evaporate one neutron. Since ϵ_γ is quite insensitive to the variation of the mass ratio

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Number of Neutrons Emitted From Individual Fission Fragments of U^{235}

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SOV/89-8-1-2/29

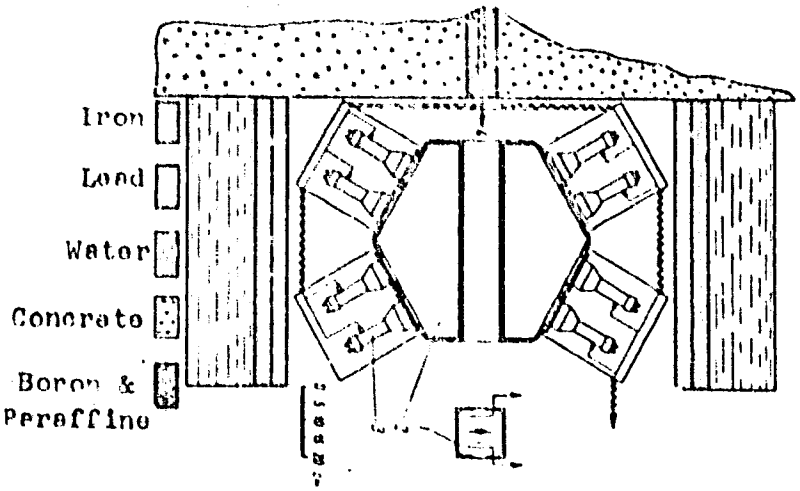

Fig. 1. Setup scheme: (1) double ionization chamber with grids; (2) scintillation tank for neutron detection; (3) photomultipliers; (4) collimated neutron beam.

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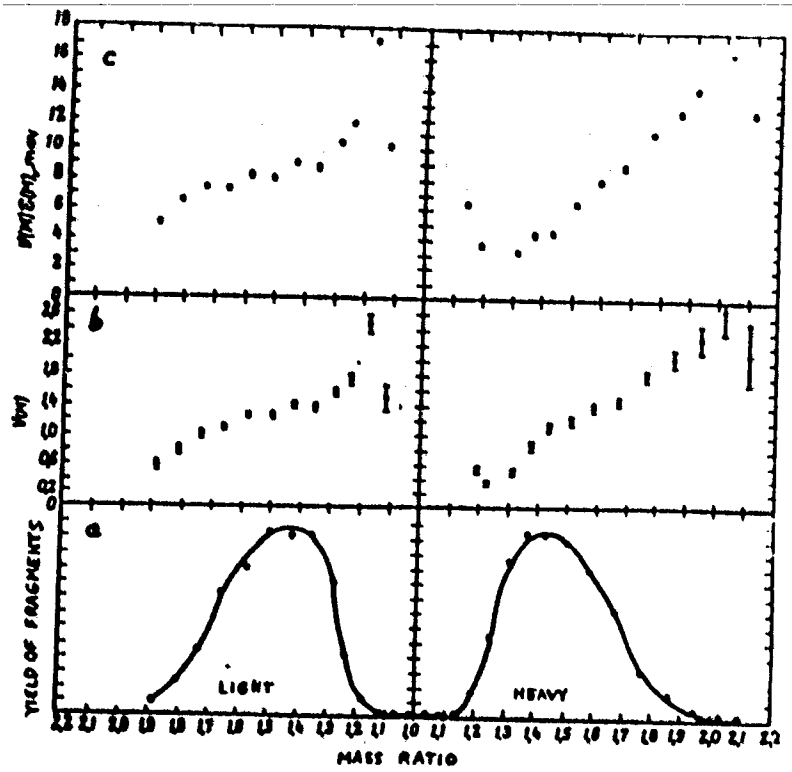
the neutrons in a 4π solid angle geometry. The authors registered 15 coincidences per minute; the background was of the order of one count per fission. Here the total number of fission was about 70,000. Corrections were made for the thickness of the support and the ionization loss according to the procedures described earlier in the literature; the efficiency of neutron detection as a function of the fragment velocity, efficiency $\eta(M,q)$, was computed from:

$$\eta(M, q) = \text{const}\,(1 + r)^2, \quad r = \sqrt{\frac{E(M)}{Mq}} \qquad (1)$$

where E(M) is kinetic energy of the fragment of mass M and q is neutron energy in the coordinate system of the moving fragment. The authors used the formula:

$$q(M) = 1{,}5 + \left[\nu(M) - \frac{\bar{\nu}}{2}\right]A$$



77208, SOV/89-8-1-2/29

Fig. 2. Experimental data for individual fragments: (a) yield distribution of fission fragments; (b) neutron yield; (c) energy carried away by neutrons.

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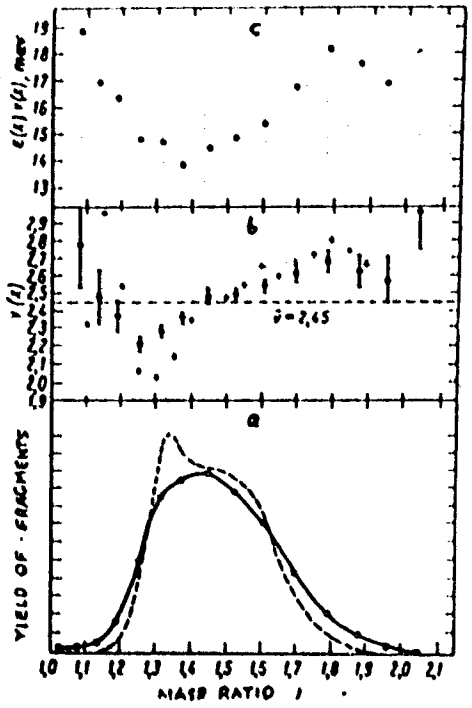

Fig. 3. Experimental data for pairs of fragments: (a) yield distribution of fission fragments; (b) neutron yield; (c) energy carried away by neutrons.

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Number of Neutrons Emitted From Individual Fission Fragments of U^{235}

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SOV/89-8-1-2/29

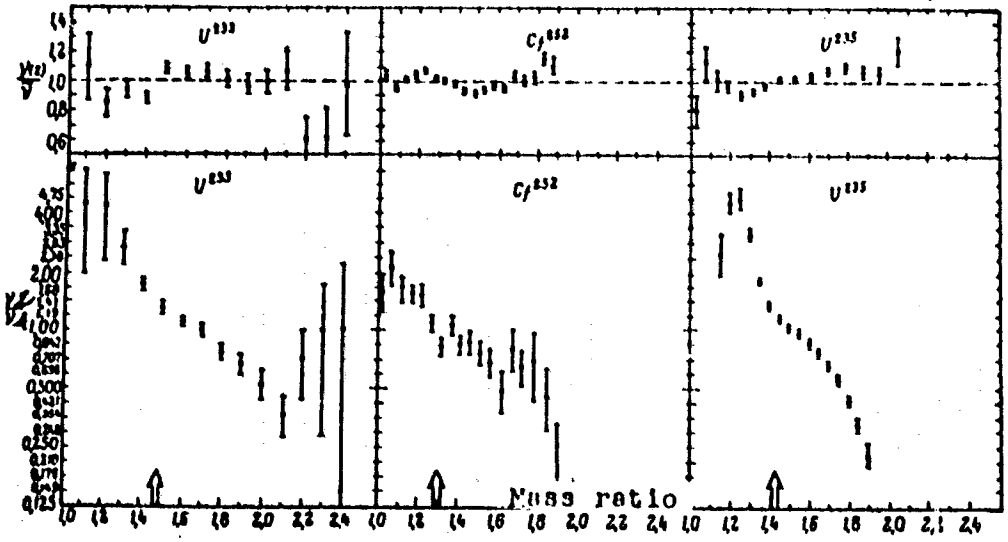

Fig. 5. Ratio of neutron yield from different fragments ν_l / ν_h and the total yield from fragment pairs $\nu(x)/\nu$ from U^{233}, Cf^{252}, and U^{235} isotopes.

Card 10/12

1 Canadian. The 5 most recent U.S. and Canadian references are: Katcoff, S., Nucleonics, 16, Nr 4, 78 (1958); Stein, W., Whetston, S., Physical Review, 110, 476 (1958); Cameron, A., A Revised Semi-Empirical Atomic Mass Formula, Chalk River, Ontario, 1957; Fong, P., Physical Review, 102, 434 (1956); Fraser, J., Milton, J., Physical Review, 93, 818 (1954).

SUBMITTED: July 17, 1959

Card 12/12

86928

S/056/60/039/005/047/051
B006/B077

24.6600

AUTHORS: Spivak, P. Ye., Mikaelyan, L. A., Kutikov, I. Ye., Arslin, V. F.

TITLE: Asymmetry in Double Mott Scattering and Absolute Values of the Longitudinal Polarization of β-Electrons

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1960, Vol. 39, No. 5(11), pp. 1479 - 1481

TEXT: The present "Letter to the Editor" continues two previous works where the authors reported about the relative measurements of longitudinal polarization of the β-electrons emitted in the decay of P^{32}, Sm^{153}, Lu^{177}, Ho^{166}, In^{114} and Au^{198}. The amount of polarization differed up to 12%. This shows that the polarization deviates from the predicted value (v/c); the amount of these deviations was determined from absolute measurements of the electron polarization from Sm^{153}. The degree of polarization is given by $\langle\sigma\rangle = (1+J_l/J_r)/(1-J_l/J_r)S$, where J_l and J_r are

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Asymmetry in Double Mott Scattering and Absolute Values of the Longitudinal Polarization of β-Electrons

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B006/B077

the left and right hand scattering intensities and S a function of angle, energy, and charge characterizing the asymmetry. In order to determine S, the authors investigated the double scattering of unpolarized electrons from gold. The results of these experiments with a scattering angle of 120° and energies of 245 and 290 kev are reported here, the measurements were obtained in the ranges of 50-250 kev and 90-150°. A short description of the experimental setup is given which is in line with the known ones. In order to eliminate the asymmetry caused through the device, the first gold scatterer was replaced by an aluminum scatterer and S_{Al}/S_{Au} was determined. Four first and four second scatterers were used which had a thickness between 70 and 300 μg/cm^2; statistical accuracy of S-measurements was determined to be ± 3%, background was not greater than 5%. The counting rate was 500-1500 pulses/min. Corrections for scattering from the walls (0.4±0.2)%, and from the scatterer backing (2-4%) as well as the finiteness of the angle of observation (0.5%) were taken into account. The following values were obtained:

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86928

Asymmetry in Double Mott Scattering and Absolute Values of the Longitudinal Polarization of β-Electrons

S/056/60/039/005/017/051
B006/B077

Electron energy (kev)	S^2	S	S/S_T
245	0.168±4%	0.411±2%	0.960±2%
290	0.161±4%	0.401±2%	0.941±2%

S/S_T denotes the ratio of the value determined experimentally and that obtained from Sherman's tables. The depolarization of the electrons passing from the source to the scatterer were examined also at electron energies of 170 kev. It was found that the asymmetry can decrease by (2 ± 2)% due to this depolarization. The following absolute values were obtained for 300 kev electrons:

	P^{32}	Sm^{153}	Lu^{177}	Ho^{166}	In^{114}	Au^{198}
polarization $\langle\sigma\rangle/(v/c)$	1.02	0.97	0.92	0.91	0.93	0.94
error of relative measurements in %	1.5	-	1.5	1.5	2.5	2.0

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86928

Asymmetry in Double Mott Scattering and Absolute Values of the Longitudinal Polarization of β-Electrons

S/056/60/039/005/047/051
B006/B077

The error of absolute measurements amounted to 3-3% and the deviations from v/c were 8 9%. There are 1 figure, 1 table, and 3 references: 2 Soviet and 1 US.

SUBMITTED: August 24, 1960

Card 4/4

SPIVAK, P.Ye.; MIKAELYAN, L.A.; KUTIKOV, I.Ye.; APALIN, V.F.; LUKASHEVICH, I.I.; SMIRNOV, G.V.

Asymmetry of double Mott scattering of electrons in the energy range between 45 and 245 Kev. Zhur.eksp.i teor.fiz. 41 no.4: 1064-1068 O '61. (MIRA 14:10)
(Electrons—Scattering)

24.6600

39675
S/056/62/043/001/045/056
B102/B104

AUTHORS: Apalin, V. F., Gritsyuk, Yu. N., Kutikov, I. Ye., Lebedev, V. I., Mikaelyan, L. A.

TITLE: The number of neutrons emitted from U^{236*} in the region of symmetrical fission

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 43, no. 1(7), 1962, 329-330

TEXT: Results hitherto obtained by studies on the dependence of fission neutrons on the fragment mass ratio are rather inaccurate. In order to obtain more reliable data, the authors investigated thermal-neutron induced U^{235} fission using a double ionization chamber. In the case of maximum distribution and symmetrical fission, the fragment yield ratio was ~210 (true value 600). The fission neutrons were detected in 4π-geometry. The total number of fission neutrons recorded at a rate of ~25 fissions/sec was ≈ $4 \cdot 10^5$. The kinetic energy E_k of the fragments and the number ν of neutrons were studied in dependence of the mass ratio
Card 1/2 * ALREADY SEARCHED BY U^{235}

44227
S/056/62/043/006/015/067
B102/B104

24.6600

AUTHORS: Apalin, V. F., Gritsyuk, Yu. N., Kutikov, I. Ye., Lebedev, V. I. Mikaelyan, L. A.

TITLE: Number of neutrons emitted from U^{234} and Pu^{240} in symmetric fission

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 43, no. 6(12), 1962, 2053-2055

TEXT: Layers of uranium or plutonium (5-6 $\mu g/cm^2$) were deposited on collodion films (~5 $\mu g/cm^2$), coated with gold (~10 $\mu g/cm^2$) and exposed to a neutron beam from the thermal column of a reactor. The fission neutrons were detected in almost perfect 4π geometry with a double ionization chamber. A mass-ratio analyzer registered all fragments with $E \geq 30$ Mev; the fragment counting rate was 20-30 pulses/sec. E_0, the kinetic fragment energy, was plotted against the fragment mass ratio, and the numbers ν of fission neutrons were plotted in the same diagrams. It can be seen that ν has a minimum where E_0 has a maximum. In the case of

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Number of neutrons emitted from ...

symmetric fission ν reaches a maximum; $\Delta\nu = \nu_{max} - \nu_{min} = 1.80 \pm 0.25$ for U^{234} and $\Delta\nu = 1.10 \pm 0.2$ for Pu^{240}. For U^{236} $\Delta\nu = 1.6 \pm 0.2$ had been obtained (ZhETF, 43, 331, 1962). Owing to effects of the apparatus these values are far from the true ones. Taking those effects into account $\Delta\nu = 4.0 \pm 0.7$, 4.4 ± 0.6, and 3.2 ± 0.6 for U^{234}, U^{236} and Pu^{240}. There is 1 figure.

SUBMITTED: July 16, 1962

Card 2/2

ACCESSION NR: AP4031137 S/0056/64/046/004/1197/1204

AUTHORS: Apalin, V. F.; Gritsyuk, Yu. N.; Kutikov, I. Ye.; Lebedev, V. I.; Mikaelyan, L. A.

TITLE: On the number of neutrons emitted by U-235 fission fragments

SOURCE: Zh. eksper. i teor. fiz., v. 46, no. 4, 1964, 1197-1204

TOPIC TAGS: uranium 235, symmetrical fission, asymmetrical fission, neutrons emitted by fragments, fragment kinetic energy, nucleus excitation energy, total energy release, fragment mass ratio

ABSTRACT: Continuing earlier measurements of the total number of neutrons emitted by both fragments in the case of fission of U^{233}, U^{235}, and Pu^{239} by thermal neutrons (ZhETF v. 43, 329 and 2053, 1962), the authors have repeated the experiments on U^{235} with equipment that provided greater resolution in mass analysis, so as to obtain a quantitative agreement between the increase in the excitation

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ACCESSION NR: AP4031137

energy and the decrease in the kinetic energy. The new equipment constituted an ionization chamber and a cadmium-containing neutron detector. Comparison of the data for U^{235} with those for Cf^{236} refutes the hypothesis advanced by Terrel (Phys. Rev. v. 127, 880, 1962) that the number of neutrons varies with the fragment mass in the same fashion for all nuclei. Calculations show that in the region of symmetrical fission the excitation energy of the fragments increases by about 20 MeV. Orig. art. has: 3 figures and 1 formula.

ASSOCIATION: None

SUBMITTED: 27Sep63 DATE ACQ: 07May64 ENCL: 02

SUB CODE: PH, NS NO REF SOV: 003 OTHER: 012

Card 2/4

ACCESSION NR: AP4031137

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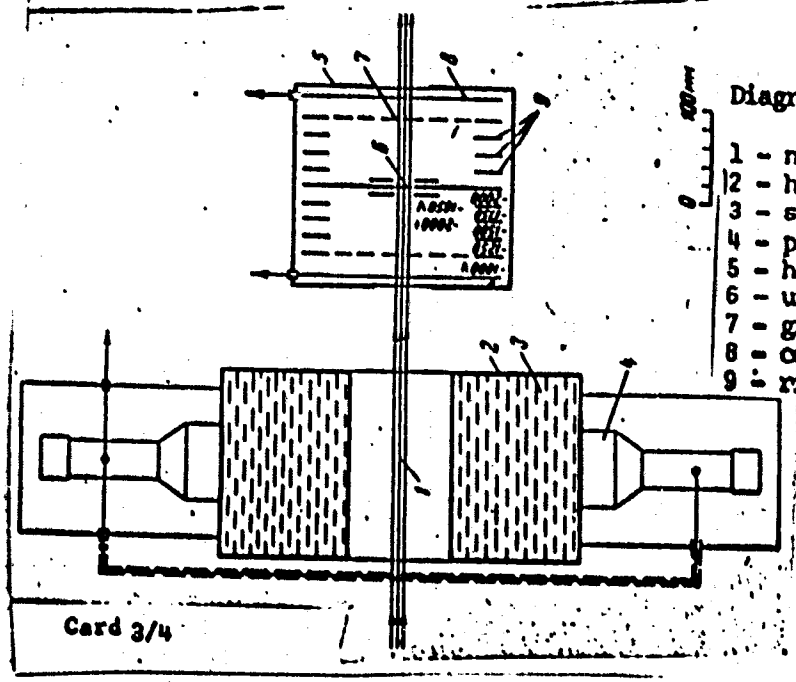

Diagram of setup

1 - neutron beam
2 - housing of neutron detector
3 - scintillator
4 - photomultiplier FEU 24
5 - housing of ionization chamber
6 - uranium layer
7 - grid
8 - collecting electrode
9 - rings setting the boundary potential

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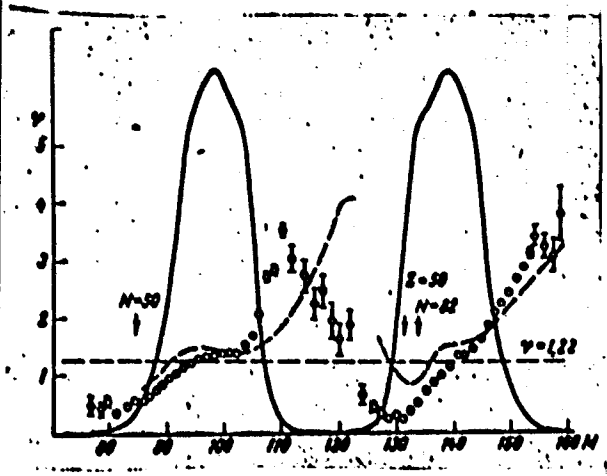
ACCESSION NR: AP4031137

ENCLOSURE: 02



Dependence of the number of neutrons ν emitted by the fragment on its mass for U^{236}; continuous curve - mass distribution of fragments; dashed curve - dependence ν(M) for Cf^{252}.

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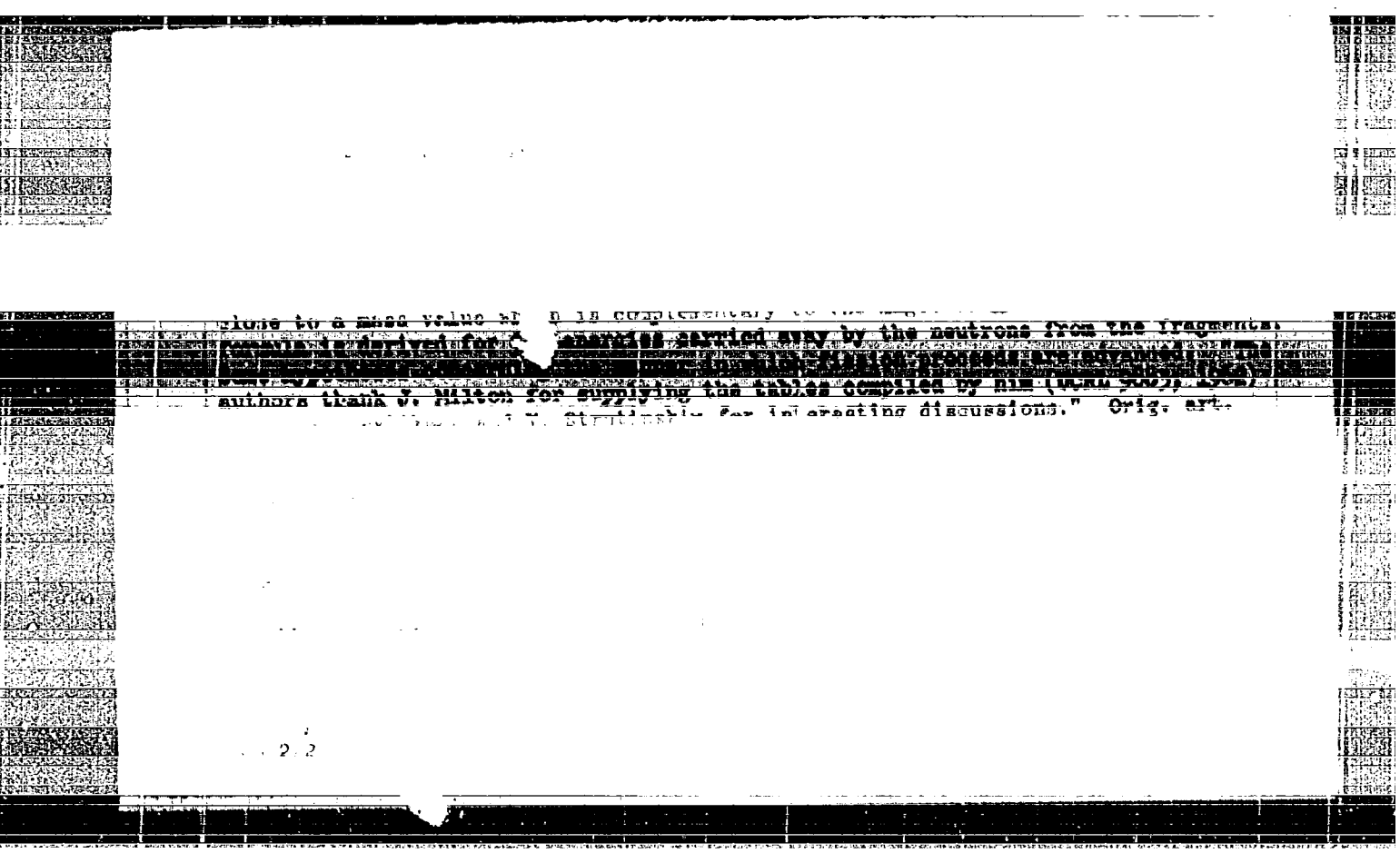

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APAL'KO, A. A., Cand Tech Sci (diss) -- "The stressed state of the walls of welded crane-support beams under the effects of local static loads" Moscow, 1960. 20p p (Min Higher and Inter Spec Educ RSFSR, Moscow Order of Labor Red Banner Construction Engineering Inst im V. V. Kuybyshev), 200 copies (KL, No 14, 1960, 131)

NGUYEN VANKUI; APAL'KO, A.A.

Erecting structures on soil with low bearing power in the Democratic Republic of Vietnam. Osn., fund. i mekh. grun. 6 [i.e.7] no.2:28-30 '65. (MIRA 18:8)

3[illegible]47. APAL'KOV, I.

Pod"em kolkhoznogo proizvodstva na osnove tra vopol'noy systemy zemledeliya. (Opyt kolkhza im. Stalina. Salsk. rayon Rost. olb.) Sots. Sel. khoz-vo, 1949, No 12, s. 32-42

Collective Farms

Economics of a large collective farm ("Stalin collective Farm"), Reviewed by P. Golubkov, Vop. ekon, No. 11, 1951.

Monthly List of Russian Accessions, Library of Congress, May 1952, Unclassified.

AFAL'KOV, I. [Yu.]

Collective Farms

Shortcomings in the "Handbook for the foreman of the field brigade. Sots. sel'khoz. 24, No. 2, 1953.

9. Monthly List of Russian Accessions, Library of Congress, June 1953, Uncl.

APALYA, D., Cand Biol Sci -- (diss) "Vegetation of the Fluvioglacial Undulating Kame Relief of Eastern Lithuania." Vil'nyus, 1957. 30 pp (Min of Higher Education USSR, Vil'nyus State Univ im V. Kapsukas), 100 copies (KL, 50-57, 118)

APANASENKO, N

Rumania

"Fighting Contagious Diseases in the Chinese Republic," (tr. from the Russian) p. 101, Analele Romano-Sovietice, Seria Medicina Generala, (Acad. Republicii Populare Romane. Institutul de Studii Romano-Sovietic) Bucuresti. Vol. 6, seria a III-a, No. 4, Mar/Apr 1952.
(Published six times a year by the Inst. of Rumano-Soviet Studies of the Rumanian Acad. Sci.

It is one of the threespecialized periodicals which since Sept. 1951 xxx superseded the Seria Medicina,"

BEAL, Vol. 2, No. 6, June 53

APANASENKO, A.A.

Evaluation of the functional state of a hypertrophic myocardium according to vectorcardiographic and roentgenkymographic data. Vrach. delo no.3:78-81 Mr '64. (MIRA 17:4)

1. Otdel klinicheskoy revmatologii (zav. doktor med.nauk G.M.Povolotskaya) Ukrainskogo nauchno-issledovatel'skogo instituta klinicheskoy meditsiny imeni akademika N.D.Strazhesko.

112-57-8-18001

Translation from: Referativnyy zhurnal, Elektrotekhnika, 1957, Nr 8, p 312 (USSR)

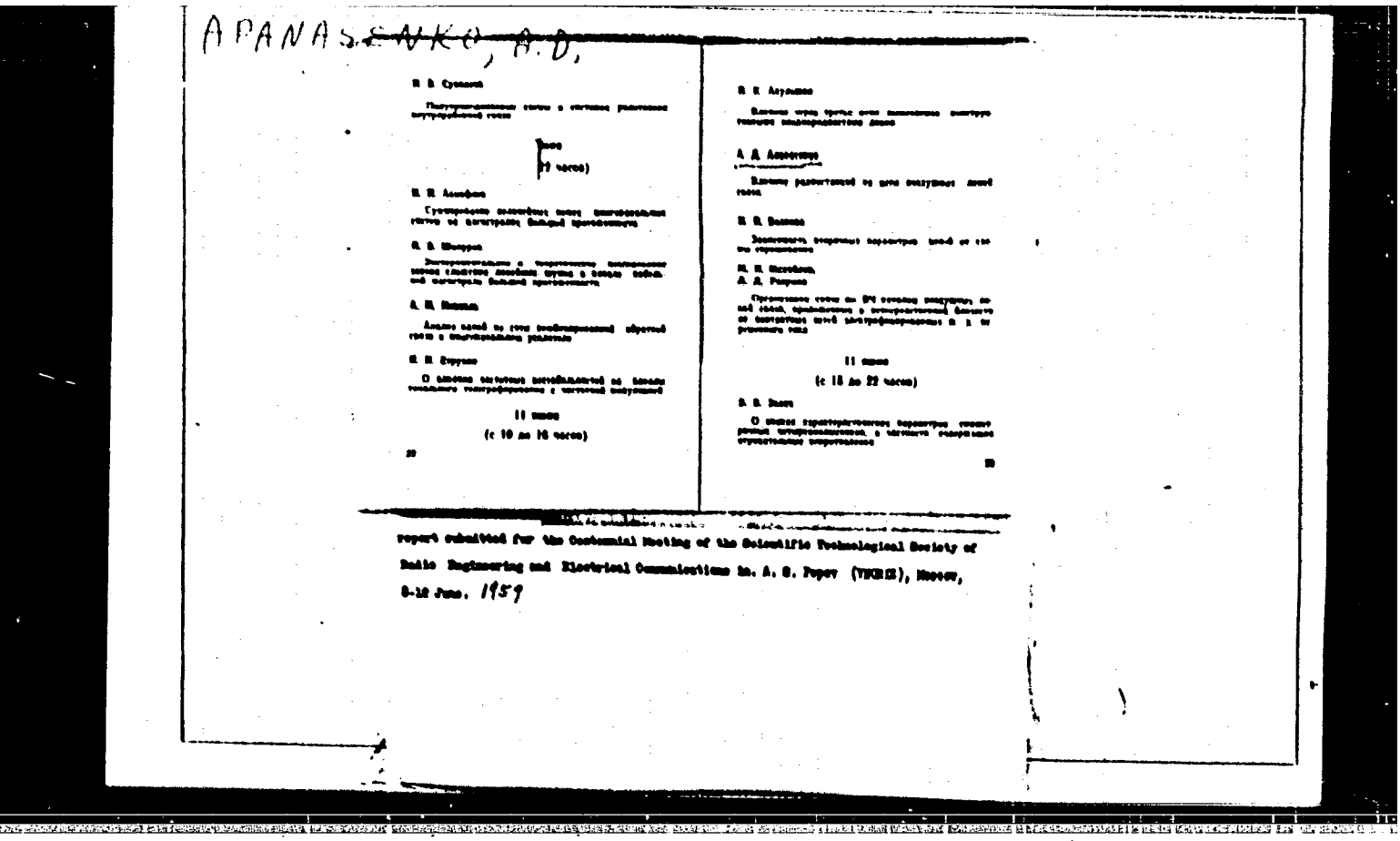
AUTHOR: Apanasenko, A. D.

TITLE: Equations of Electromagnetic-Energy Transmission Over a Multiwire Line (Uravneniya peredachi elektromagnitnoy energii po mnogoprovodnym liniyam)

PERIODICAL: Sb. nauch. tr. Tsentr. n.-i. in-ta svyazi (Collection of Scientific Transactions of the Central Scientific-Research Institute of Communications), Moscow, Svyaz'izdat, 1956, pp 5-30

ABSTRACT: Presented are the equations of electromagnetic-energy transmission over a multiwire line having losses; the equations reveal an interrelation between currents and voltages in all circuits of the multiwire line. The equations permit solving problems of energy transmission over multiwire lines and determining the mutual influences among the circuits. An exact solution of the problem of electromagnetic-energy transmission over a no-loss line is also considered. Formulae are suggested for determining the

Card 1/2



APANASENKO, A.D.

report submitted for the Centennial Meeting of the Scientific Technological Society of Radio Engineering and Electrical Communications im. A. S. Popov (TNIRE), Moscow, 8-12 June, 1959

APANASENKO, A.D., starshiy nauchnyy sotrudnik; GUMELYA, A.N.; VOLNOVA, N.P., mladshiy nauchnyy sotrudnik; GERASIMOV, N.N., mladshiy nauchnyy sotrudnik; GERASIMOVA, R.V., mladshiy nauchnyy sotrudnik; KON'KOV, A.A., mladshiy nauchnyy sotrudnik [deceased]; MARTYNOV, G.K., starshiy tekhnik; FILIPPOVA, T.V., starshiy tekhnik; SUCHKOVA, Z.Ye., starshiy tekhnik. Prinimal uchastiye AKUL'SHIN, P.K., doktor tekhn.nauk, doktor tekhn.nauk. SVERDLOVA, I.S., red.; SHEFER, G.I., tekhn.red.

[Rules for the intersection of telephone lines in overhead telephone communication networks] Instruktsiia po skreshchivaniiu telefonnykh tsepei vozdushnykh linii sviazi. Moskva, Gos. izd-vo lit-ry po voprosam sviazi i radio, 1959. 270 p. (MIRA 13:2)

1. Russia (1923- U.S.S.R.) Glavnoye upravleniye mezhdugorodnoy telefonno-telegrafnoy svyazi. 2. TSentral'nyy nauchno-issledovatel'skiy institut svyazi Ministerstva svyazi SSSR (for Apanasenko, Volnova, Gerasimov, Gerasimova, Kon'kov, Martynov, Filippova, Suchkova). 3. Nachal'nik laboratorii vozdushnykh liniy svyazi TSentral'nogo nauchno-issledovatel'skogo instituta svyazi Ministerstva svyazi SSSR (for Gumelya).

(Telephone) (Electric lines--Overhead)

POPOV, V.A.; APANASENKO, B.G.; GORYACHEV, I.A.

Providing emergency surgical care in remote areas of the Arctic. (MIRA 15:1)
Voen-med. zhur. no.7:84 Jl '61.
(ARCTIC REGIONS--SURGERY)

APANASENKO, B.G., starshiy leytenant meditsinskoy sluzhby

Treatment of and consolidation time for fractures under conditions of the Far North. Voen.-med. zhur. no.8:81 Ag '61. (MIRA 15:2)
(RUSSIA, NORTHERN--FRACTURES)

APANASENKO, B.G., (First Lt. of the Medical Service)

"The treatment and time needed for consolidation of fractures under conditions of the Artic."

Voyenno-Meditsinskiy Zhurnal, No 8, Aug 1961

CHERKASOV, Ye. D.; APANASENKO, B. G.

Course of fractures under Arctic conditions. Vest. khir. no.4: 66-69 '62. (MIRA 15:4)

(ARCTIC REGIONS—FRACTURES)

APANASENKO, B.G.; DERGACHEV, S.V.; SMIRNOV, S.I.

Comparative evaluation of different methods of treating fractures of the clavicle. Vest. khir. 93 no.9:54-60 S '64. (MIRA 18:4)

1. Iz kliniki voyenno-morskoy i gospital'noy khirurgii (nachal'nik-prof. Ye. V. Smirnov) Voyenno-meditsinskoy ordena Lenina akademii imeni Kirova.

[redacted], B.G.; [redacted], V.V.

Causes, frequency and prevention of the breaking of the metallic nails used in osteosynthesis. Vest. khir. 93 no.11:84-90 N '64.
(MIRA 18:6)

1. Iz kliniki voyenno-morskoy i gospital'noy khirurgii (nachal'nik - prof. Ye.V. Smirnov) Voyenno-meditsinskoy ordena Lenina akademii imeni Kirova, Leningrad.

SHABOLKIN, L.N., inzh.; APANASENKO, I.S., inzh.

Hydraulic flow stimulators (flow builders). Der.prom. 10 no.12:24-25 D '61. (MIRA14:12)

1. Institut Uralgiprolesbumprom.
(Hydraulic)
(Perm--Woodworking industries--Equipment and supplies)

APANASENKO, I.S.; SHABOLKIN, L.M.

Production line for refining woodpulp. Bum. prom. 36 no.10:11 O '61. (MIRA 15:1)

1. Ural'skiy gosudarstvennyy proyektnyy institut "Uralgiproles-bumprom".

(Papermaking machinery)

SOKOLOVA, N.N.; APANASHCHENKO, N.I.; NEFEDOVA, L.A.

Study of the reactogenicity and immunological effectiveness of influenza-diphtherial and influenza-diphtherial-whooping cough vaccines. Vop.virus. 7 no.6:688-693 N-D '62. (MIRA 16:4)

1. Institut virusologii imeni D.I.Ivanoskogo AMN SSSR i Institut epidemiologii i mikrobiologii imeni N.F.Gamalei AMN SSSR, Moskva.
(INFLUENZA--PREVENTIVE INOCULATION)
(DIPHTHERIA--PREVENTIVE INOCULATION)
(WHOOPING COUGH--PREVENTIVE INOCULATION)

[illegible], V. A.

USSR/Physics - Surface electromagnetic waves FD-457

Card 1/1 : Pub. 153 - 7/18

Author : Karasev, M. D., and Apanasenko, V. A.

Title : Obtaining of surface waves propagating along a single cylindrical conductor

Periodical : Zhur. tekh. fiz. 24, 662-666, Apr 1954

Abstract : Obtain experimentally the surface waves along a bare copper single conductor and investigate the structure of their fields. Claim that such investigations are of physical interest because the appearance of these waves is connected with the presence of a boundary of separation between two media in which electromagnetic waves are propagated with different phase velocity.

Institution : —

Submitted : April 1, 1953

L 32592-66 EWT(l)/FCS(k)/ETC(m) IJP(c) WW/GG/GW
ACC NR: AP5021476 SOURCE CODE: UR/0046/65/011/003/0300/0305

AUTHOR: Apanasenko, V. A.

ORG: Acoustics Institute AN SSSR, Moscow (Akusticheskiy institut AN SSSR)

TITLE: Time relations between pulses propagating along different rays in an underwater sound channel

SOURCE: Akusticheskiy zhurnal, v. 11, no. 3, 1965, 300-305

TOPIC TAGS: sound propagation, acoustic echo, detonation wave, underwater acoustics, underwater explosion

ABSTRACT: A graphic method is proposed for determining the instants of arrival of pulses propagating along different rays from a detonation sound source in an underwater sound channel which is uniform along its path. The method is based on a procedure developed originally by M. Iving and O. Worzel (in collection "Rasprostraneniye zvuka v okeane" [Sound Propagation in the Ocean], M., IL, 1951) for the case when the source and receiver are on a single horizontal plane (for example, on the channel axis). The generalization of the method is based on the use of the concept of average horizontal velocity of pulse propagation along the ray, introduced earlier (Fizicheskiye osnovy podvodnoy akustiki [Physical Principles of Underwater Acoustics] M., Sov. Radio, 1955). The procedure is based on plotting a set of time-distance diagrams for a discrete number of angles and using linear interpolation. To construct the original nomogram it is necessary to use an electronic computer for the calcula-

Card 1/2 UDC: 534.231.1

L 32592-66

ACC NR: AP5021476

tions. Author thanks L. M. Brekhovskikh for remarks made during the preparation of the article. Orig. art. has: 5 figures and 8 formulas.

SUB CODE: 19, 08 SUBM DATE: 11May64/ ORIG REF: 002/ OTH REF: 002
20

Card 2/2 BK

ACC NR: AP7006685 (A) SOURCE CODE: UR/0145/66/000/010/0164/0168

AUTHOR: Apanasenko, V. F. (Instructor); Sadovskiy, A. A. (Senior instructor)

ORG: Affiliate of the Krasnoyarsk Polytechnical Institute (Filial Krasnoyarskogo politekhnicheskogo instituta)

TITLE: Investigation of the properties of an exponential waveguide during operation on directed ultrasonic oscillations

SOURCE: IVUZ. Mashinostroyeniye, no. 10, 1966, 164-168

TOPIC TAGS: waveguide, ultrasonic welding, ultrasonic wave propagation

ABSTRACT: The waveguides and vibrators used in conventional ultrasonic welders are designed according to the acoustic horn theory for concentration of undirected oscillations. Experiments were conducted by the authors of this article to determine whether waveguides of this type may be used for concentration of directed ultrasonic oscillations. An ultrasonic bath (see figure) was used with a quartz crystal transducer 50 mm in diameter resonating on a frequency of 1.89 Mc. High-frequency electric oscillations were fed to the crystal from a UVO-2 oscillator with a power of 0.9 kw and a frequency range of 1-4 Mc. The signal from the measurement points was fed to the input of an IO-4 oscillograph and the image on the screen was recorded. The results are tabulated. It was found that exponential waveguides do not concentrate

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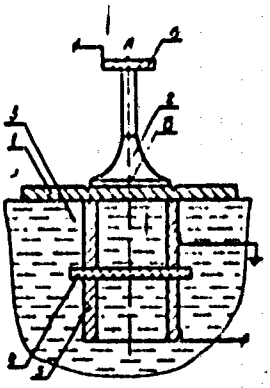
UDC: 621.791

ACC NR: AP7006685

directed ultrasonic oscillations. Experiments showed that these oscillations may be concentrated by hollow conical waveguides with a vertex angle of 180-2α, where α is the first or second critical angle. The relationship between the vertex angle, the frequency of the oscillations and wall thickness should be selected so that the ultrasonic oscillations along the inner and outer limits of the waveguide are in phase at the tip. Orig. art. has: 3 figures, 3 tables.



SUB CODE: 13, 20/ SUBM DATE: 10Aug65

Card 2/2

[redacted], G.I., inzhener; [redacted], V.P., model'yer.

Accuracy in the development of shoe last surfaces. Leg.prom. 17 [illegible] Jl '57. (MLRA 10:9)

(Shoe industry) (Lasts)

APANASENKO, V.P.

Using the calculation method for the design of shoe upper patterns. Leh.prom. no.4:30-37 O-D '62. (MIRA 16:5)

1. Eksperimantal'naya obuvnaya fabrika Ukrainskogo nauchno-issledovatel'skogo instituta koshevennoy promyshlennosti.
(Shoe manufacture)

APANASENKO, V.P.

Technological development of the upper part of lasts for the design and calculation of shoe upper styles. Leh. prom. no.2: 54-57 Ap-Je'64 (MIRA 17:7)

APANASENKO, I.S.

Installing water supply lines in district agricultural centers. Zhil.-kom.khoz. 7 no.4:12-13 '57. (MLRA 10:7)

1. Glavnyy inzhener Tambovskogo oblastnogo otdela kommunal'nogo khozyaystva.

(Water supply, Rural)

APANASENKO, Ye.

Transformation of district centers of Tambov Province. Zhil.-kom. khoz. 10 no.7:6 '60. (MIRA 13:10)

1. Glavnyy inzhener Tambovskogo oblkomkhoza, g.Tambov.
(Tambov Province--City planning)

APANASENKO, Z.I.

Effect of the radiation dose on the electric conductivity of the rat brain. Radiobiologiia 1 no.1:45-51 '61. (MIRA 14:7)

1. Institut biologicheskoy fiziki AN SSSR, Moskva.
(RADIATION—PHYSIOLOGICAL EFFECT) (ELECTROPHYSIOLOGY)
(BRAIN)

SESSION V—5—7: Bioelectric Effects II.

The Time Factor in the Reaction of the Central Nervous System to Radiation (a)

N. N. Livshits, F. S. Meierov, Z. I. Apanasenko, and M. A. Kuretsova

The latent period of the flexory defensive reflex in rabbits subjected to 400 r total X-irradiation, given either in a single dose or in doses of 10 r daily, five times weekly, was substantially the same for the two methods of exposure.

The electrical conductivity of the encephalic cortex of white rats showed that a 600 r γ-irradiation of the animals at 0.5 r/min affects the dynamics of the electric resistance of the brain considerably more than the same dose given at 600 r/min. The conditioned reflex of white rats given 160 r γ-irradiation chronically at 0.276 r/hr for 22 hours daily was found to be less affected than after acute irradiation at a dose rate of 83 r/min. The leukopoenic reaction of peripheral blood of the animals in all three cases was found to be more sudden in the case of acute exposure, i.e. for higher dose rates.

Thus, within the dose range of 160-600 r, we found, in all three tests used, either an equivalent or a higher degree of damage to the central system with the chronic, protracted or fractionated irradiations than with the acute irradiations. In contrast, the injuries in peripheral blood are more substantial in the case of acute irradiations.

(a) Institute of Biophysics, Academy of Sciences, Moscow, USSR

report presented at the 2nd Intl. Congress of Radiation Research,
Harrogate/Yorkshire, Gt. Brit. 5-11 Aug 1962

S/865/62/002/000/019/042
D405/D301

AUTHORS: Luk'yanova, L.D., Livshits, N.N., Apanasenko, Z.I. and Kuznetsova, M.A.

TITLE: Long-range effect of space flight on higher nervous system and some unconditional reflexes

SOURCE: Problemy kosmicheskoy biologii. v. 2. Ed. by N. Sisakyan and V. Yazdovskiy. Moscow, Izd-vo AN SSSR, 1962, 192-205

TEXT: The higher nervous activity of rats prior to, and after flight on the Second Space Ship was investigated, as well as the vestibular reflexes, the latent period of the unconditional motric defensive reflex and the spontaneous bioelectric muscular activity of guinea pigs. Simultaneously, the morphological state of the peripheral blood, weight, and general condition were studied. The experiments were conducted on white male-rats by Kotlyarevskiy's method. Conclusions: The flight on the Second Space Ship did not lead to appreciable changes in the conditional reflex activity of

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the two white rats during the period of the experiments (from the fourth day after landing to the natural death of the animals). The flight of the guinea pig on the Fourth Space Ship did not lead to changes in the latent period of the unconditioned reflex. An increase in the spontaneous bioelectric activity of the extremity muscles was observed in the guinea pig after the flight. In the latter, a decrease in the latent period of the vestibular reflex and an increase in its activity was also observed. It is suggested that the change in the characteristics of the vestibular reflex, observed in the guinea pig after the flight, is related to functional changes in the afferent or central neurons, and possibly in both these types of neurons. There are 7 figures.

APANASENKO, Z. I.

AID Nr. 974-8 22 May

DELAYED SPACEFLIGHT EFFECTS ON THE LABYRINTHINE AND FLEXION REFLEXES IN GUINEA PIGS (USSR)

Apanasenko, Z. I., and M. A. Kuznetsova. IN: Akademiya nauk SSSR. Izvestiya. Seriya biologicheskaya, no. 2, Mar-Apr 1963, 214-221.
S/216/63/000/002/002/004

In order to investigate the effect of spaceflight conditions on the functional status of the vestibular apparatus, one test guinea pig which had undergone spaceflight and eight controls which had remained on the ground were subjected to oscillation about their longitudinal horizontal axes. The flown guinea pig showed a very strong spontaneous bioelectric activity of the leg muscles which exceeded that observed in the controls. In addition, the latent period of electromyographic reaction to adequate stimulation decreased in the flown guinea pig, and the after-effect was prolonged. Amplitude of biocurrents during reaction to stimulus was very high, but its relation to background activity remained about the same as before the flight. It is assumed that flight-induced changes were localized in the afferent branch of the vestibular-reflex arc, or in central neurons which are functionally connected to the vestibular analyzer. [AB]

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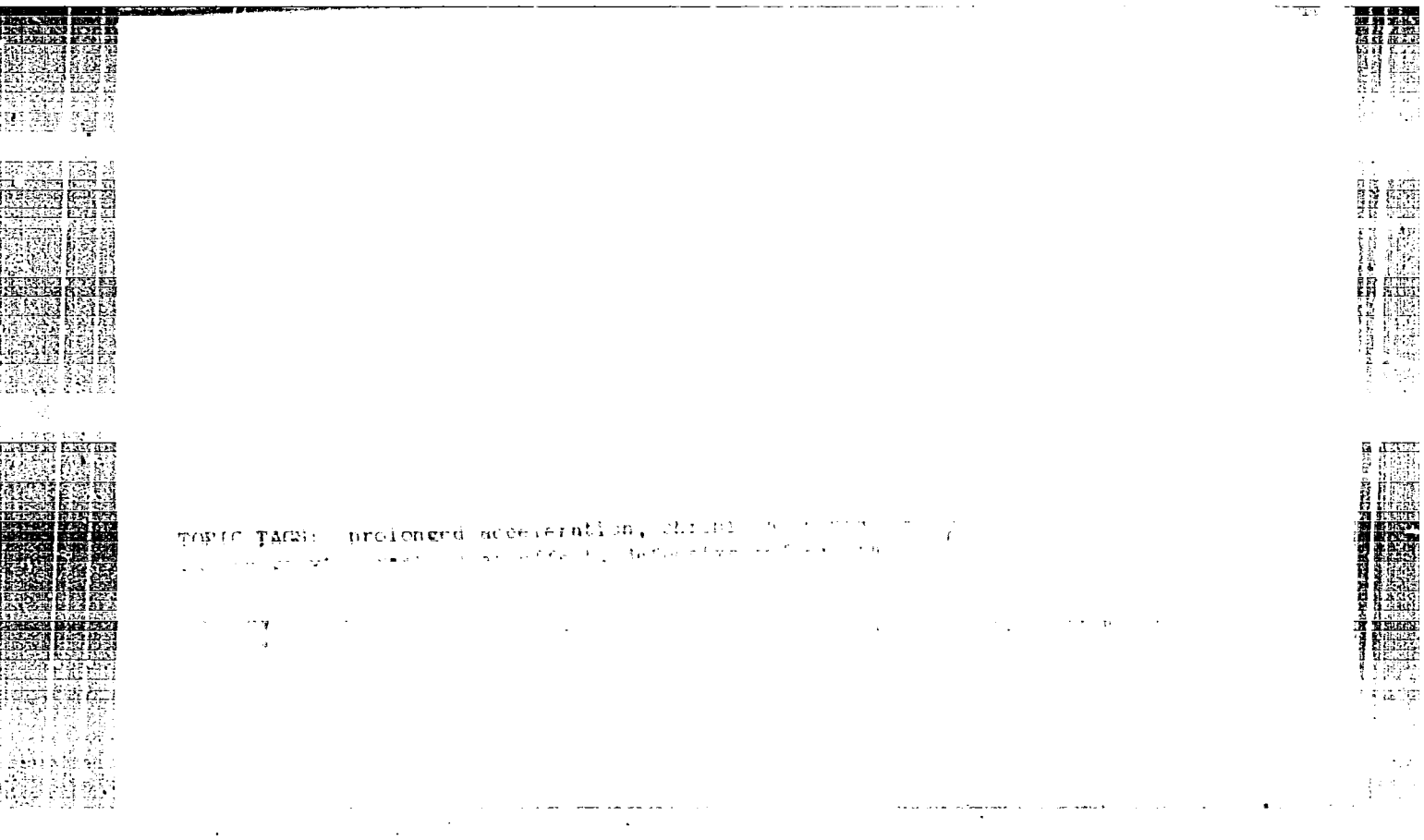

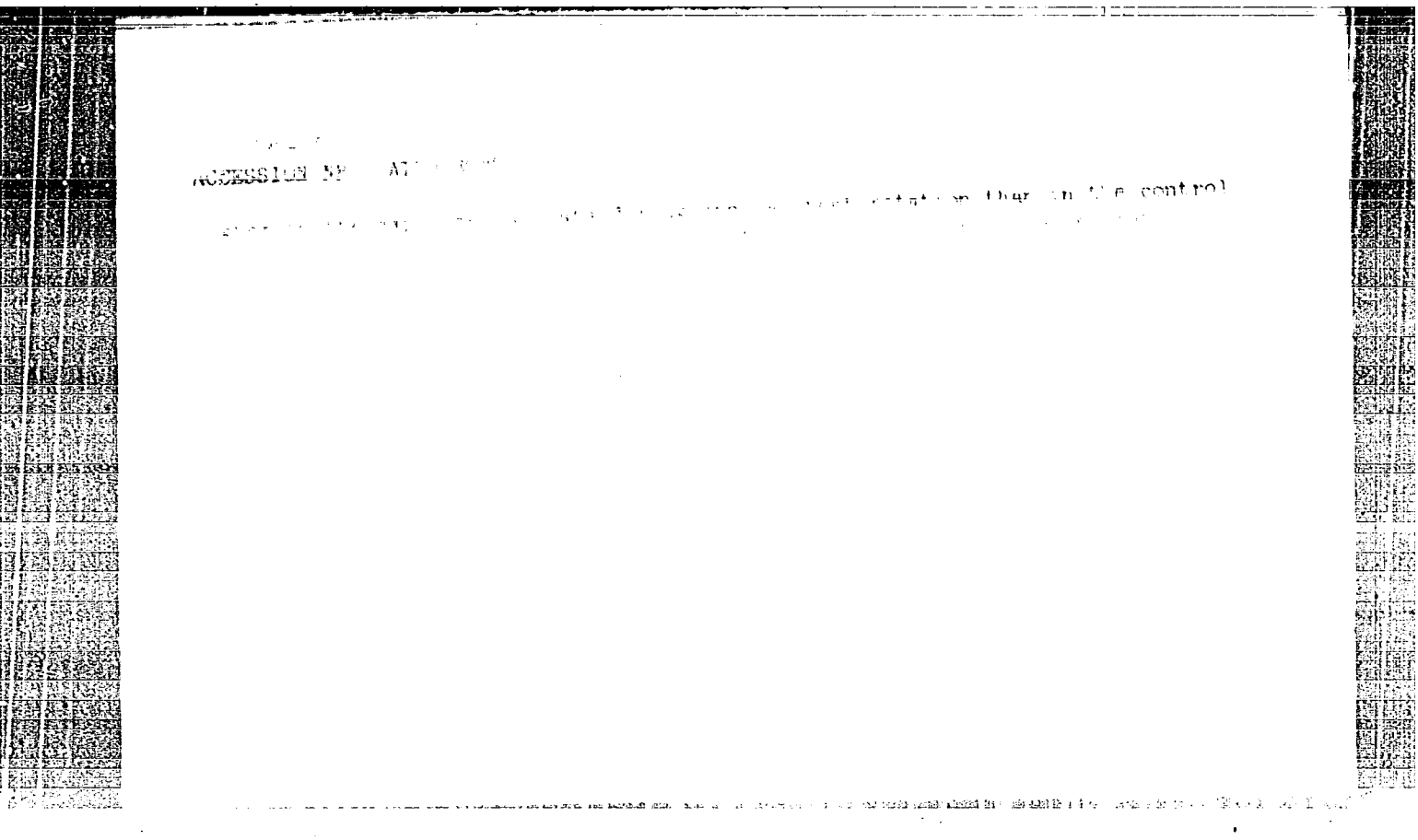

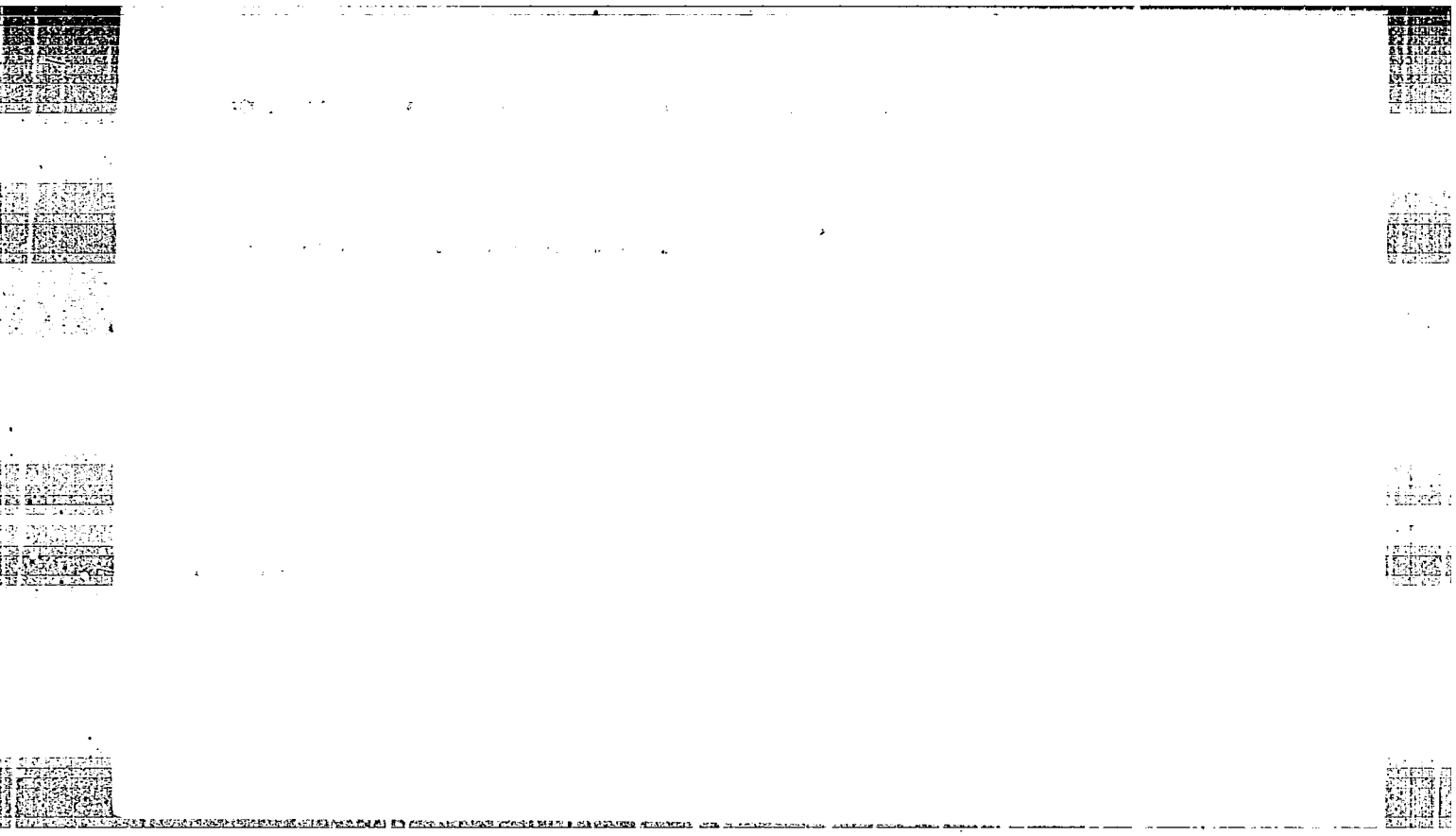

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measured doses of rocking around the longitudinal axis of the animal's [illegible]

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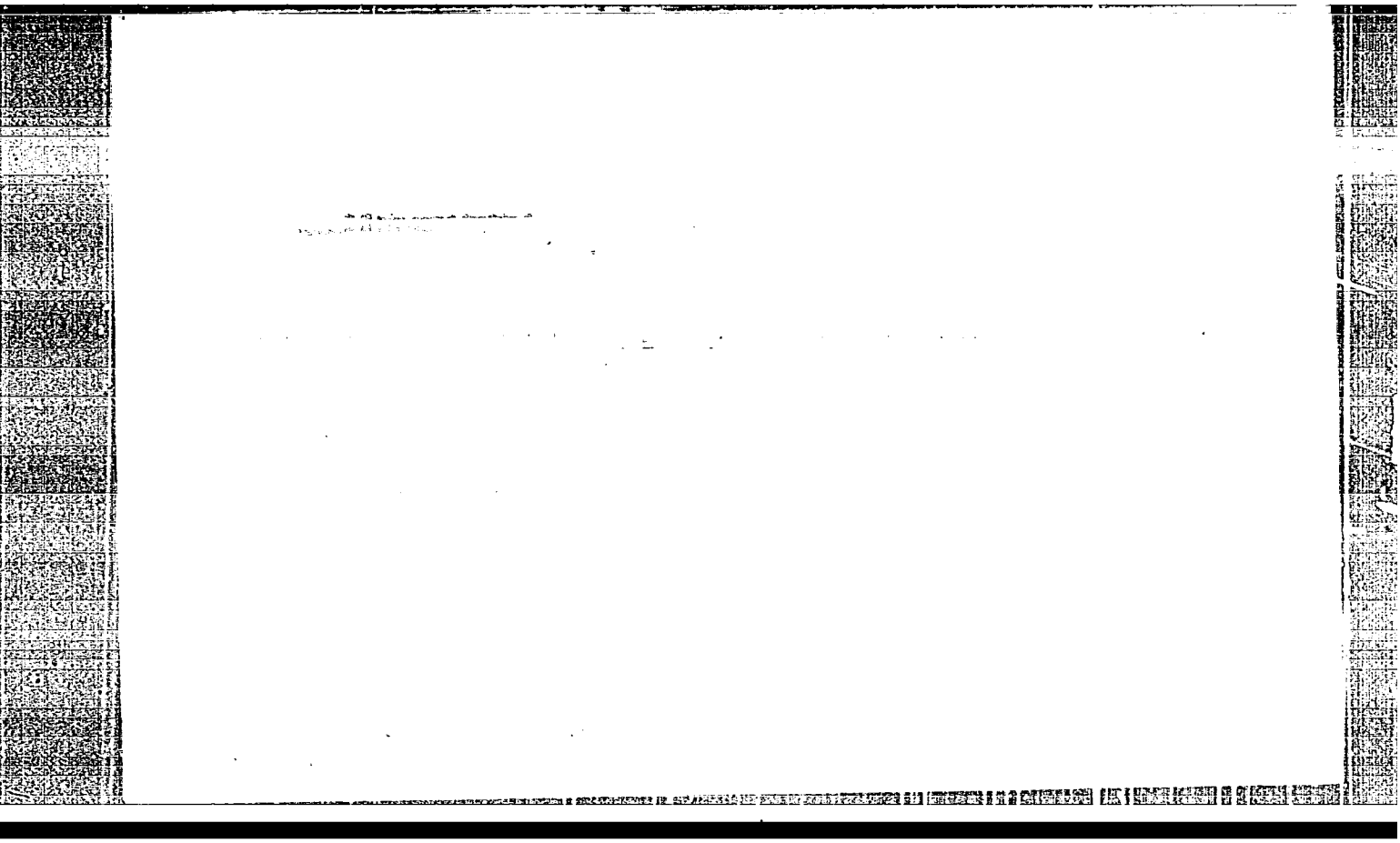

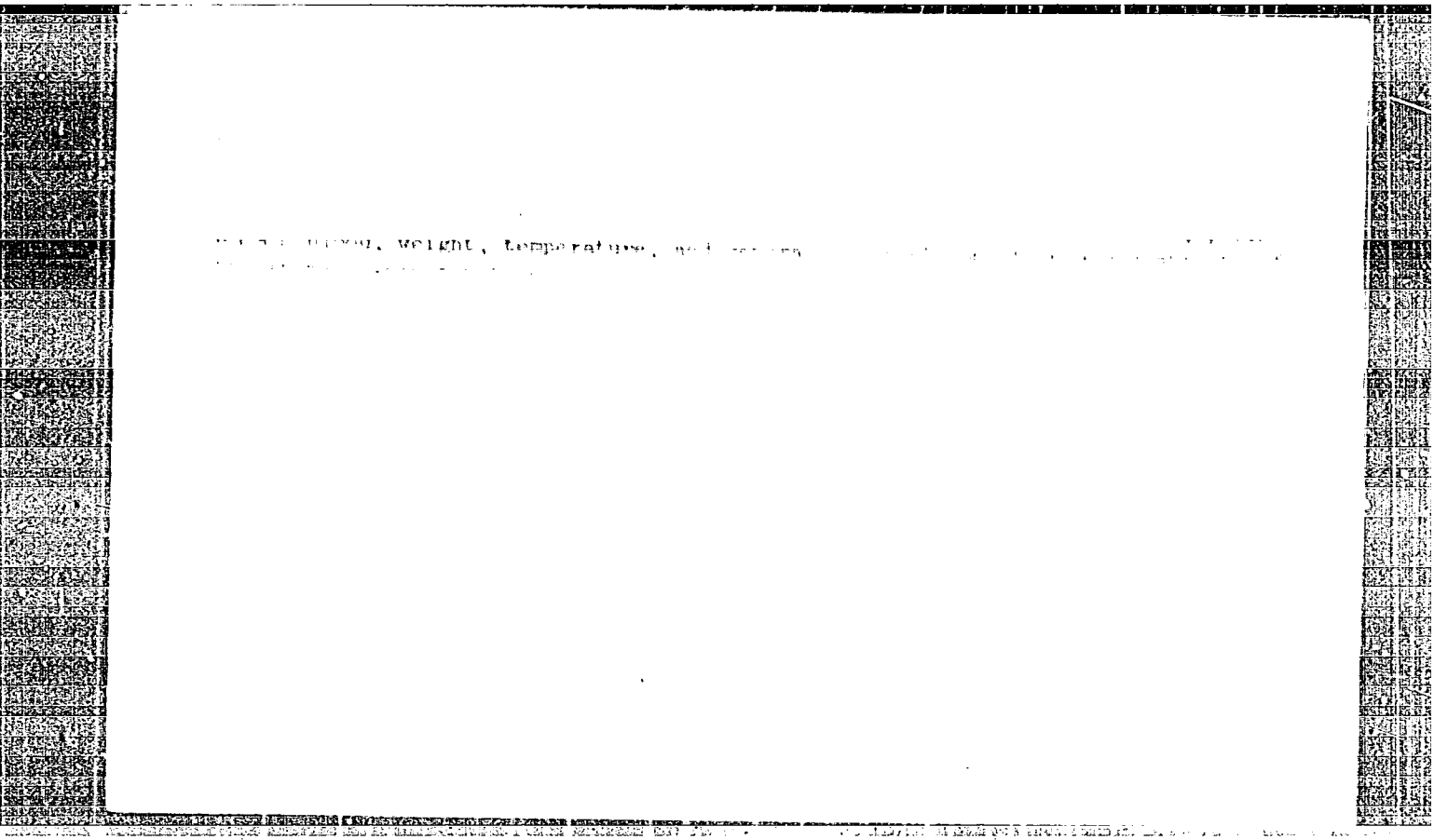

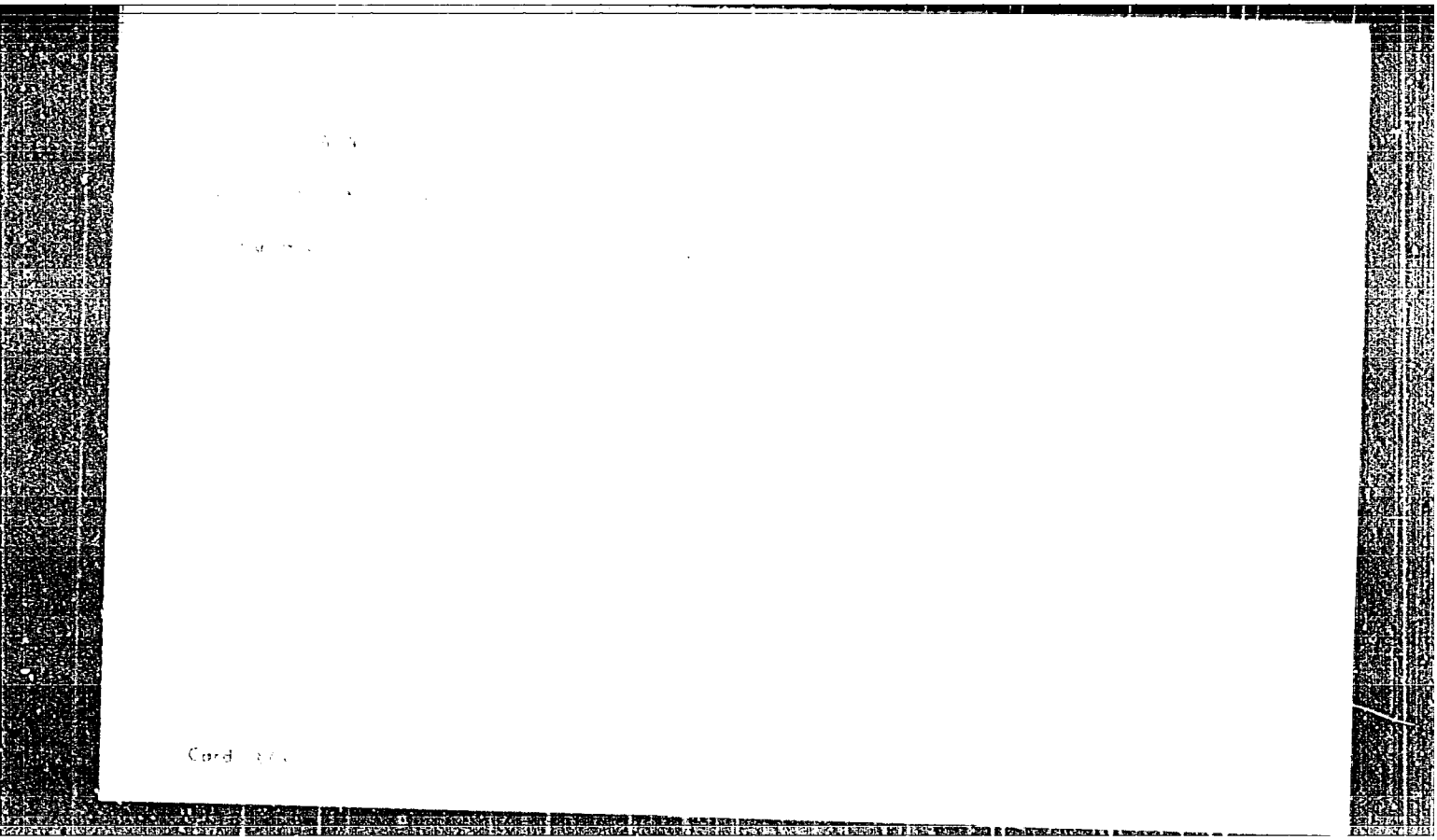

ACCESSION NR: AT4037697 S/2865/64/003/000/0269/0277

AUTHOR: Apanasenko, Z. I.; Kuznetsova, M. A.

TITLE: Combined effects of vibration and ionizing radiation on the vestibular and the flexor reflexes

SOURCE: AN SSSR. Otdeleniye biologicheskikh nauk. Problemy* kosmicheskoy biologii, v. 3, 1964, 269-277

TOPIC TAGS: conditioned reflex, vibration, ionizing radiation, mouse, vestibular reflex, flexor reflex

ABSTRACT: Experiments were performed on guinea pigs and the C-57 strain of black mice in order to determine the combined effects of vibration and radiation on the survival of the function of the vestibular analyzer and the latent period of the flexor reflex. Acute whole-body irradiation was carried out by means of gamma rays from Co^{60}. The dose was 500 r for guinea pigs and 600 and 750 r for mice. The dose rate was 261 r/min. The animals were subjected to a vibration of 70 cps with an amplitude of 0.4 mm for 15 min. Animals were divided into four groups. The first group was subjected to two periods of vibration but was not irradiated.

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ACCESSION NR: AT4037697

The second group was exposed to a single dose of radiation but no vibration. The third group was subjected to vibration both before and after irradiation. The fourth group served as controls. Vibration and irradiation taken separately or combined brought about significant changes in the normal values of the parameters studied. In some respects, vibration produced greater changes than the lethal dose of radiation to which the animals were subjected. In all cases of combined irradiation and vibration, it was found that vibration substantially changed the effects of radiation on the organism. When the animals were subjected to the combined effects of irradiation and vibration, the death rate increased and the life span decreased to a greater degree than when they were exposed to radiation alone. The effects of the combined action of irradiation and vibration on the central nervous system are complex. Individual functional indices of the central nervous system examined show the separate effects of each of these two stress factors. If both vibration and irradiation shift the parameters of a given index in one direction, their combined action exceeds the effects of irradiation alone. If these stimuli act in opposite directions, the effect of their combined action can be less than, or even qualitatively different from, that of irradiation alone.

Card 2/2 BC

ACCESSION NR. AP4035825 S/0020/64/156/001/0225/0227

AUTHOR: Gyurdzhian, A. A. ; Apanasenko, Z. I.

TITLE: Functional state of the vestibular apparatus in white rats raised under conditions of daily acceleration (centrifugation)

SOURCE: AN SSSR. Doklady*, v. 156, no. 1, 1964, 225-227

TOPIC TAGS: acceleration, acceleration effect, centrifugation, acceleration adaptation, vestibular apparatus, vestibular stimulation, vestibular tonic reaction, bioelectric response, latent period, stimulation aftereffect

ABSTRACT: Half a litter of rats with their mother was exposed to 4—5 hrs of centrifugation daily (except Sundays) from the age of 2—3 days until the age of 2—3 months. The centrifuge had a radius of revolution of 135 cm, a rate of 33 rpm, and a radial acceleration of 2 g. During centrifugation the rats were able to move about their cage, nurse from their mother, and take other food. The other half of the litter, placed with another mother, served as control. The

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experimental animals weighed only 60% to 70% as much as the controls from the 20th to the 50th day, but did not differ in their behavior and motor activity. The functional state of the vestibular apparatus was studied in 17 centrifuged and 17 control rats, using electromyograms (EMG's) of the muscles of the lower extremities as an index. The vestibular apparatus was stimulated by rocking the animals about their long axes 0.6 times a second for 10 sec with a maximum angle of inclination of 25°. Background electrical activity (from EMG's, animals at rest) was less than half as great in the centrifuged animals as in the controls; the EMG smoothed out, with rare pulses not exceeding 5 to 20 v and occasionally dropping to noise level. During vestibular stimulation (rocking), the absolute bioelectric activity of the muscles investigated in the centrifuged animals was 0.4 of that found in the controls. The latent period of the vestibular tonic reaction was 0.5 sec for the centrifuged animals as compared with 0.18 sec for the controls. Weakening of the reaction was also manifested in reduction of the duration of vestibular stimulation aftereffect: about 1.0 sec for the controls, compared to an average 0.24 sec for the centrifuged animals, in

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ACCESSION NR. AP4035825

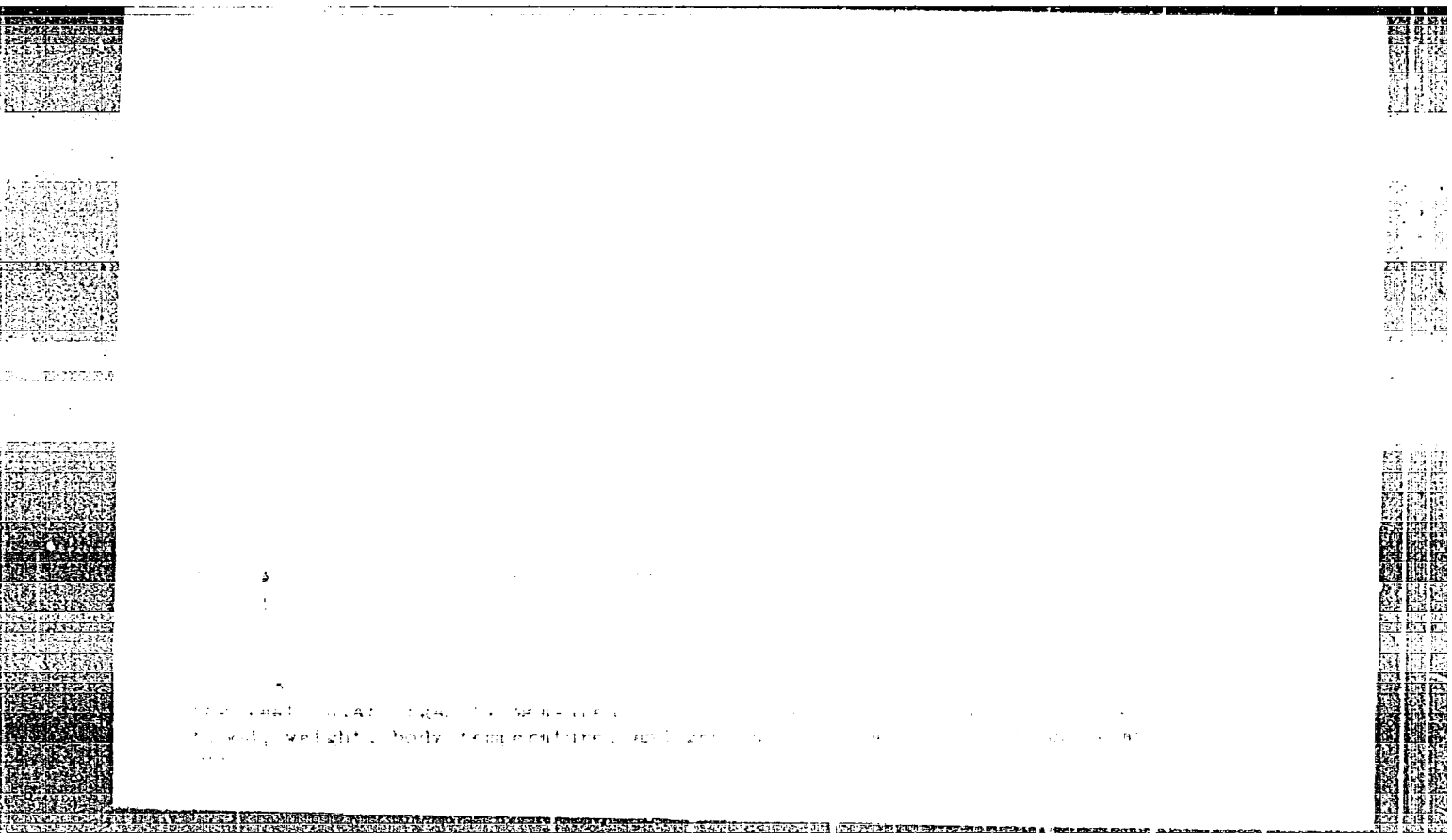
which, in many cases, no aftereffect at all could be observed. It is concluded that daily prolonged acceleration affects the developing organism, in particular the formation of the functional state of the organ of equilibrium. Further studies may help clarify the role of normal and abnormal gravity as an ecological factor and shed light on the problems of training and adaptation of the body to non-terrestrial gravity conditions.

ASSOCIATION: none

SUBMITTED: 16Dec63 DATE ACQ: 26May64 ENCL: 00

SUB CODE: AM NO REF SOV: 001 OTHER: 004

Card 3/3



the animals were also monitored. It was found that

ACC NR: AT6025372

SOURCE CODE: UR/0000/66/000/000/0025/0044

AUTHOR: Aranasenko, Z. I.

ORG: none

TITLE: Functional condition of the otolithic part of the vestibular analyzer in guinea pigs after double exposure to centrifugation

SOURCE: AN SSSR. Institut biologicheskoy fiziki. Vliyaniye faktorov kosmicheskogo poleta na funktsii tsentral'noy nervnoy sistemy (Effect of space flight factors on functions of the central nervous system). Moscow, Izd-vo Nauka, 1966, 25-44

TOPIC TAGS: vestibular function, biologic acceleration effect, otolaryngology, electromyography, skeletal mechanics, myology, experiment animal, bioelectric phenomenon, centrifuge, reflex activity, biologic vibration effect, nervous system

ABSTRACT:

This article opens with a review of Soviet works concerned with the effect of acceleration on the vestibular analyzer. The works described deal chiefly with the influence of accelerations on labyrinth functions in general, and semicircular canal function in particular. However, no data devoted to acceleration effects on the otolithic part of the vestibular analyzer were found in the literature. It has been suggested that vestibulo-

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UDC: 612.014.482

tonic effects on muscles, especially extensors, are accomplished by the otolithic part of the vestibular apparatus. In order to study the effect of acceleration on otolith function, special experiments were conducted using carefully measured stimuli directed to this part of the vestibular analyzer. One group of guinea pigs was subjected to acceleration twice (with a 24-hr interval), and another group served as a control. Centrifugation was conducted for 15-min periods at 135 rpm; back-chest accelerations of 8 G were created. The animals were kept under observation from 10 days prior to centrifugation until 10 days after.

Electromyographs of the vestibulotonic reflex in hind leg extensors were taken at 10-sec intervals, before, during, and directly following vestibular stimulation. After centrifugation a two-phase change in muscle bioelectricity was observed: a brief period of increased activity (on the day of centrifugation and the following day) followed by a longer normalization period.

The latent period of the extensor muscle reaction also changed considerably under the influence of acceleration (see Fig. 1).

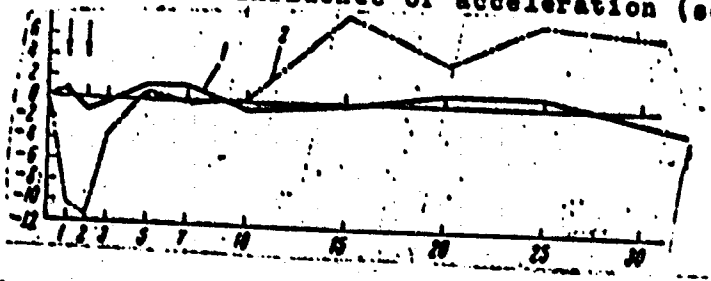

Fig. 1. Change in the length of the latent period of the reaction to adequate vestibular stimulation after centrifugation

On the abscissa-- time after centrifugation in days; on the ordinate-- length of the length period in conditional units

As can be seen from the figure, the length of the latent period decreased on the day of centrifugation, and then gradually normalized. On the tenth day after centrifugation, however, the length of the latent period increased substantially, remaining at this high level for the rest of the observation period.

Changes in the length of the aftereffect in the myoelectrical reaction under study are shown in Fig. 2. (see Fig. 2).

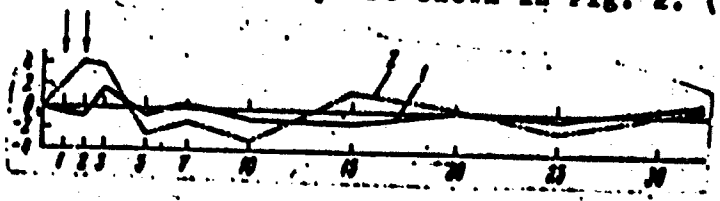

Fig. 2. Change in the length of the aftereffect reaction to adequate vestibular stimulation after centrifugation

On the abscissa -- time after centrifugation in days; on the ordinate-- duration of the aftereffect in conditional units

For comparative purposes, a graph from an earlier work by the author is reproduced, showing the effects of centrifugation.

vibration and spaceflight factors on the vestibulotonic reflex (see Fig. 3 for one aspect of this reaction, changes in muscle bioelectricity).

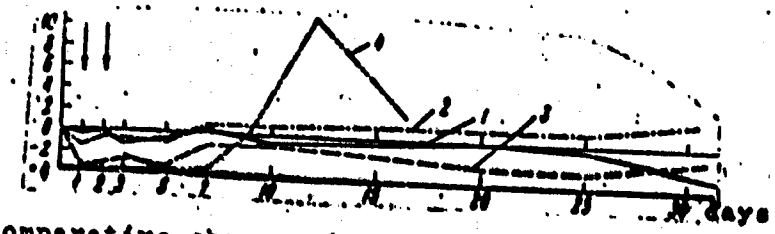

Fig. 3. Comparative changes in the electrical activity of guinea-pig hindleg muscle during adequate vestibular stimulation after centrifugation, vibration, and spaceflight

On the abscissa-- time after centrifugation in days; on the ordinate-- value of muscular bioelectric activity in conditional units. 0 - average level of muscle bioelectric activity prior to the effect; 1 - control, 2- group of animals subjected to centrifugation; 3 - group of animals subjected to vibration, 4 - guinea pig on the 4th orbital spaceship

It is clear from the graph that the bioelectrical characteristics of the vestibulotonic reflex change more briefly under the influence of centrifugation than of vibration (which is a more adequate otolith stimulus). The graph also demonstrates the greater similarity (in type and duration of effects) between spaceflight and vibration, as compared with spaceflight and centrifugation.

Experimental results proved that the degree of acceleration used did not affect animals unfavorably during the 30-day observation period (with the exception of one animal which died in the course of the experiment). Weight gain was normal and only insignificant leukocytosis was observed in the animals' peripheral blood.

The observed increase in myoelectrical activity -- accompanied by increased muscle tone -- is usually considered a compensatory reaction to the effect of accelerations. Results of these experiments permit the conclusion that the increased level of extensor bioelectricity is caused more by signaling from the vestibular analyzer than by increased flow of afferent impulses from proprioceptors and baroceptors (through the reticular formation into the cerebral cortex). It is very

ACC NR: AT6035372

probable that the otoliths participate in formation of the myoelectrical reaction to acceleration. It has long been recognized that the utriculus is directly involved in vestibular influence on the tone of extensor muscles. Indirect confirmation of this hypothesis was given in these experiments, in which changes in electromyographic parameters under the influence of acceleration (with specific stimulus of the otolith part of the vestibular analyzer) were established.

The fact that the general level of muscle bioelectricity did not change significantly during or after the reaction to vestibular stimulation shows that the magnitude of acceleration used, although it stimulated the otoliths, was not a completely adequate stimulus. Suggested explanations for the detailed physiological mechanisms of the effects described are given.

Orig. art. has: 16 figures. [W.A. No. 22; ATD Report 66-997]

SUB CODE: 06 / SUBM DATE: 01Feb66

Card 7/7

L 07479-67 EWT(1)/EWT(m) SCTB DD/GD

ACC NR: AT6025384 SOURCE CODE: UR/0000/66/000/000/0197/0217

AUTHOR: Apanasenko, Z. I.

ORG: none

TITLE: Effect of prolonged gamma irradiation on the function of the vestibular analyzer and the role of the time factor in radiation reactions of the nervous system

SOURCE: AN SSSR. Institut biologicheskoy fiziki. Vliyaniye faktorov kosmicheskogo poleta na funktsii tsentral'noy nervnoy sistemy (Effect of space flight factors on functions of the central nervous system). Moscow, Izd-vo Nauka, 1966, 197-217

TOPIC TAGS: gamma irradiation, radiation biologic effect, vestibular function, experiment animal, electromyography, bioelectric phenomenon, physiologic parameter

ABSTRACT:

The effects of chronic and acute radiation on the vestibular analyzer were studied in guinea pigs weighing 350-500 g. For chronic tests, Co^{60} was administered to the animals at a rate of 6 r/min until a 500-r dose had been reached. Control animals were treated like experimentals but were not irradiated.

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Postradiation examination began 2.0--2.5 hr after exposure and were continued on days 1, 2, 3, 5, 7, 10, 15, 20, 25, and 30. Examination of control animals paralleled examination of experimental animals. In all, 12 experimental and 14 control animals were studied.

The functional condition of the vestibular analyzer was assessed as a function of the electromyographic characteristics of vestibulotonic reflexes recorded from hindleg extensor muscles. Muscle bioelectricity was recorded in 3 sequential 10-sec periods: 1) at rest; 2) during adequate stimulation of the vestibular analyzer; 3) immediately after vestibular stimulation. Adequate vestibular stimulus consisted of rolling the animal around the longitudinal axis of the its body on a specially designed apparatus for 10 sec at a rate of 0.6 cps and at an 25° incline.

In addition to equilibrium tests, regular examinations of the peripheral blood, body temperature, body weight, and general viability were conducted. Some results of this study are summarized in Table 1.

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Table 1. Comparative effects of acute and chronic irradiation

Index	Quantitative acute	Quantitative chronic	Qualitative acute	Qualitative chronic
muscle bioelectricity at rest	less	more	decrease	increase
muscle bioelectricity during adequate vestibular stimulus	more	less	increase-variation of changes great	decrease-variations unitypical
muscle bioelectricity directly after vestibular stimulus	less	more	wave-like fluctuations near zero level	decrease
latent period of the myoelectric reaction to adequate vestibular stimulus	nearly unchanged	nearly unchanged	increase-changes rapid	increase-changes slow

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duration of the aftereffect of the myoelectric reaction to adequate vestibular stimulus	less	more	less	less	0

The study thus showed that chronic irradiation brought about a statistically reliable increase in the spontaneous bioelectrical activity of hindlimb extensors in a resting state. The reaction of these muscles to adequate vestibular stimulus due to chronic irradiation decreased, the latent period of the reaction increased, and the aftereffect was abbreviated sharply. All changes observed in the study were reliable and prolonged in duration, with normalization taking place only after 25--30 days.

In general, chronic irradiation caused greater changes in the characteristics of the vestibulotonic reaction than acute irradiation. The differences in the effects of chronic and acute irradiation were frequently qualitative as well as quantitative. The statistical scatter of data was significantly less for chronic irradiation than for acute.

Hematological examinations revealed heavier radiation damage due to acute irradiation than to chronic irradiation.

L 07479-67
ACC NR: AT6025384

Orig. art. has: 9 figures and 1 table. [W.A. No. 22; ATD Report 66-99]

SUB CODE: 06 / SUBM DATE: 01Feb66

Card 5/5

ACC NR: AT6025385 SOURCE CODE: UR/0000/66/000/000/0218/0235

AUTHOR: Apanasenko, Z. I.

38
B+1
19

ORG: none

TITLE: Complex effects of a double exposure to vibration plus chronic irradiation on the functional state of the vestibular apparatus

SOURCE: AN SSSR, Institut biologicheskoy fiziki. Vliyaniye faktorov kosmicheskogo poleta na funktsii tsentral'noy nervnoy sistem (Effect of space flight factors on functions of the central nervous system). Moscow, Izd-vo Nauka, 1966, 218-235

TOPIC TAGS: experiment animal, vestibular function, biologic vibration effect, radiation biologic effect, gamma irradiation, bioelectric phenomenon, muscle physiology, physiologic parameter, electromyography

ABSTRACT:

Male guinea pigs weighing 350--500 g were used to study the effects of gamma irradiation plus double exposure to vibration on vestibular function. After 10--15 days of preliminary testing to establish a background stereotype, animals were exposed to 15 min of vibration with a frequency of 70 cps and amplitude of 0.4 mm. This was followed (20--30 min later) by exposure to gamma radiation (0.6 r/min; exposure, 13 hr 54

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min total dose, 500 r). After irradiation (2.0--.25 hr later) the animals were again exposed to vibration with the same parameters. Postexposure examinations were conducted for as many as 30 days, as specified in a previous article. The methods used to assess the functional condition of the vestibular analyzer and the general physiological state of the animals were analogous to those mentioned in the previous article. Some results of this study are summarized in Table 1.

Table 1. Values for the median of differences between the effects of combined stresses and corresponding types of irradiation

Index	series with acute radiation	series with prolonged irradiation	P
background muscle bioelectricity	+8.89	+2.38	<0.05
muscle bioelectricity during adequate vestibular stimulus	-11.17	-1.5	<0.01

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